

CLAIMS

We claim:

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1. A pharyngoesophageal monitoring system, comprising:
- a. a first probe;
  - b. a second probe adjacent said first probe;
  - c. a first sensor arrangement configured at a position along said first probe;
  - d. a second sensor arrangement configured at a position along said second probe; and
  - e. a recorder responsive to said sensor arrangements;
- wherein said recorder is capable of correlation of signals generated by said sensor arrangements.
2. A pharyngoesophageal monitoring system as described in claim 1 wherein said first and said second sensor arrangements each comprise at least one pH sensor.
3. A pharyngoesophageal monitoring system as described in claim 1 wherein said recorder is capable of correlation of signals comprising at least one type of signal selected from the group consisting of at least one pH signal, at least one time signal, at least one clearing time signal of a gastroesophageal reflux episode, and at least one user input signal.
4. A pharyngoesophageal monitoring system as described in claim 3 wherein said at least one user input signal comprises at least one event marker, said at least one event marker selected from the group consisting of at least one heartburn marker, at least one pain marker, at least one eating marker, at least one lying down marker, at least one sleeping marker, and at least one belching marker.

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5. A pharyngoesophageal monitoring system as described in claim 1 wherein said recorder comprises a correlation element responsive to said sensor arrangements.
6. A pharyngoesophageal monitoring system as described in claim 5 wherein said correlation element comprises at least one microprocessor signally receptive of said signals and capable of correlation of at least said signals generated by said sensor arrangement.
7. A pharyngoesophageal monitoring system as described in claim 6 further comprising at least one display device responsive to said at least one microprocessor.
8. A pharyngoesophageal monitoring system as described in claim 1 wherein said recorder comprises a user input.
9. A pharyngoesophageal monitoring system as described in claim 1 wherein said recorder is integratively responsive to said sensor arrangements.
10. A pharyngoesophageal monitoring system as described in claim 1 wherein said first and second probes are bifurcated.
11. A pharyngoesophageal monitoring system as described in claim 1 further comprising a third sensor arrangement configured at a position along said second probe.
12. A pharyngoesophageal monitoring system as described in claim 11 wherein said third sensor arrangement comprises at least one pH sensor.
13. A pharyngoesophageal monitoring system as described in claim 11 wherein said second sensor arrangement is configured at a position relative to said third sensor arrangement

corresponding to opposing pharyngoesophageal portions proximate an upper esophageal sphincter of an individual.

14. A pharyngoesophageal monitoring system as described in claim 13 wherein said first sensor arrangement is adjustably configured at a position corresponding to an esophageal portion of an individual.
15. A pharyngoesophageal monitoring system as described in claim 14 wherein first sensor arrangement is adjustably configured at a position corresponding to a position proximate a lower esophageal sphincter of an individual.
16. A pharyngoesophageal monitoring system as described in claim 15 wherein said first sensor arrangement is adjustably configured at a position corresponding to a position approximately 5 centimeters above a lower esophageal sphincter of an individual.
17. A pharyngoesophageal monitoring system as described in claim 15 wherein said first sensor arrangement is configured at a position of about 5 centimeters from a distal end of said first probe.
18. A pharyngoesophageal monitoring system as described in claim 13 wherein said second sensor arrangement is configured at a distance of about 7 centimeters from said third sensor arrangement.
19. A pharyngoesophageal monitoring system as described in claims 1 and 13 wherein said first and said second sensor arrangements are adjustably configured at positions corresponding to an esophageal portion of an individual.

20. A pharyngoesophageal monitoring system as described in claims 1 and 13 wherein said first and said second sensor arrangements are adjustably configured at positions corresponding to an pharyngoesophageal portion of an individual.
21. A pharyngoesophageal monitoring system as described in claim 1 wherein said first sensor arrangement is configured at a substantially distal end of said first probe.
22. A pharyngoesophageal monitoring system as described in claims 1 or 21 wherein said second sensor arrangement is configured at a substantially distal end of said second probe.
23. A pharyngoesophageal monitoring system as described in claim 1 wherein at least one probe comprises a stabilizer element.
24. A pharyngoesophageal monitoring system as described in claim 23 wherein said stabilizer element comprises a stabilizer section configured at a distal end of said at least one probe.
25. A pharyngoesophageal monitoring system as described in claim 1 wherein at least one probe is adjustably configurable corresponding to a upper esophageal sphincter of an individual.
26. A pharyngoesophageal monitoring system as described in claim 1 wherein at least one probe is adjustably configurable corresponding to a lower esophageal sphincter of an individual.
27. A pharyngoesophageal monitoring system as described in claim 1 wherein one of said first and second probes is adjustably configurable to a position corresponding to a upper esophageal sphincter of an individual and the other probe is adjustably configurable to a position corresponding to a lower esophageal sphincter of an individual.

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28. A pharyngoesophageal monitoring system as described in claims 1, 25, 26, or 27, further comprising an adjustment element to which said probes are adjustably configurable.
29. A pharyngoesophageal monitoring system as described in claim 28 wherein said adjustment element comprises a clamp.
30. A pharyngoesophageal monitoring system as described in claim 29 wherein at least one of said probes comprises an adjustment portion to which at least one of said probes are adjustably configurable.
31. A pharyngoesophageal monitoring system as described in claim 30 wherein said adjustment portion comprises a slack portion of said at least one probe.
32. A pharyngoesophageal monitoring system as described in claim 1 wherein at least one of said probes comprise an adjustment portion to which at least one of said probes are adjustably configurable.
33. A pharyngoesophageal monitoring system as described in claim 32 wherein said adjustment portion comprises a slack portion of said at least one probe.
34. A pharyngoesophageal monitoring system as described in claim 1 further comprising at least a third probe adjacent at least one of said first and second probes.
35. A bifurcated monitoring catheter capable of monitoring acid reflux, comprising:
- a. a first sensor arrangement;
  - b. a second sensor arrangement configurationally associated with said first sensor arrangement; and
  - c. a recorder responsive to said first and said second sensor arrangements.

36. A bifurcated monitoring catheter capable of monitoring acid reflux as described in claim 35 further comprising at least a third sensor arrangement configurationally associated with at least one of said first and said second sensor arrangements.
37. A bifurcated monitoring catheter capable of monitoring acid reflux as described in claim 35 wherein said recorder is integratively responsive to said sensor arrangements.
38. A bifurcated monitoring catheter capable of monitoring acid reflux as described in claim 35 wherein said recorder is capable of correlation of signals generated by said sensor arrangements.
39. A pharyngoesophageal monitoring catheter, comprising:
- a. a first sensor arrangement;
  - b. a second sensor arrangement configurationally associated with said first sensor arrangement; and
  - c. a recorder correlationally responsive to said first and said second sensor arrangements.
40. A pharyngoesophageal monitoring catheter as described in claim 39 further comprising at least a third sensor arrangement configurationally associated with at least one of said first and said second sensor arrangements
41. A pharyngoesophageal monitoring catheter as described in claim 39 wherein said recorder is integratively responsive to said sensor arrangements.
42. A method of pharyngoesophageal monitoring, comprising the steps of:
- a. inserting a first probe having a first sensor arrangement at least partially within at least a first portion of a pharyngoesophageal passage;

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time signal, a clearing time signal of a gastroesophageal reflux episode, and a user input signal.

47. A method of pharyngoesophageal monitoring as described in claim 46 wherein said user input signal comprises at least one event marker, said at least one event marker selected from the group consisting of a heartburn marker, a pain marker, an eating marker, a lying down marker, a sleeping marker, and a belching marker.
48. A method of pharyngoesophageal monitoring as described in claim 45 further comprising the step of receiving at least one signal selected from the group consisting of a time signal, a clearing time signal of a gastroesophageal reflux episode, and a user input signal.
49. A method of pharyngoesophageal monitoring as described in claim 48 wherein said user input signal comprises at least one event marker, said at least one event marker selected from the group consisting of a heartburn marker, a pain marker, an eating marker, a lying down marker, a sleeping marker, and a belching marker.
50. A method of pharyngoesophageal monitoring as described in claim 46 wherein said step of correlating said received signals comprises correlating said signals representative of said characteristics and said at least one signal selected from the group consisting of a time signal, a clearing time signal of a gastroesophageal reflux episode, and a user input signal.
51. An ambulatory record of data representative of gastroesophageal refluxate produced by the method described in claim 50.
52. An ambulatory record of data representative of gastroesophageal refluxate disease produced by the method described in claim 50.



53. A method of pharyngoesophageal monitoring as described in claim 48 wherein said step of correlating said received signals comprises correlating said signals representative of said characteristics and said at least one signal selected from the group consisting of a time signal, a clearing time signal of a gastroesophageal reflux episode, and a user input signal.
54. An ambulatory record of data representative of gastroesophageal refluxate produced by the method described in claim 53.
55. An ambulatory record of data representative of gastroesophageal refluxate disease produced by the method described in claim 53.
56. An ambulatory record of data representative of gastroesophageal refluxate produced by the method of described in claim 42
57. An ambulatory record of data representative of gastroesophageal refluxate disease produced by the method described in claim 42
58. A method of pharyngoesophageal monitoring as described in claim 42 wherein said steps of inserting said first and second probes are performed substantially simultaneously.
59. A method of pharyngoesophageal monitoring as described in claim 42 wherein said step of inserting a second probe comprises inserting a second probe having a third sensor arrangement at least partially within at least a third portion of a pharyngoesophageal passage and further comprising the steps of:
- a. sensing at least one characteristic of said third portion;
  - b. generating at least one signal representative of said at least one characteristic of said third portion; and

- c. receiving said signals representative of said characteristics of said first, second and third portions at said recorder.

60. A method of pharyngoesophageal monitoring as described in claim 42 wherein said step of inserting a second probe having a second sensor arrangement at least partially within at least a second portion of a pharyngoesophageal passage comprises inserting said second probe such that said second sensor arrangement is positioned proximate a upper esophageal sphincter of an individual.

61. A method of pharyngoesophageal monitoring as described in claim 60 wherein said second portion corresponds to a pharyngoesophageal portion proximate a upper esophageal sphincter of an individual.

62. A method of pharyngoesophageal monitoring as described in claim 60 wherein said step of inserting a second probe comprises inserting a second probe having a third sensor arrangement at least partially within at least a third portion of a pharyngoesophageal passage and further comprising the steps of:

- a. sensing at least one characteristic of said third portion;
- b. generating at least one signal representative of said at least one characteristic of said third portion; and
- c. receiving said signals representative of said characteristics of said first, second and third portions at said recorder.

63. A method of pharyngoesophageal monitoring as described in claim 62 wherein said second and third portions correspond to opposing pharyngoesophageal portions proximate a upper esophageal sphincter of an individual.

64. A method of pharyngoesophageal monitoring as described in claims 59 or 63 further comprising the step of configuring said second sensor arrangement a distance of about 7 centimeters from said third sensor arrangement.
65. A method of pharyngoesophageal monitoring as described in claims 42, 60 or 63 wherein said step of inserting a first probe having a first sensor arrangement at least partially within at least a first portion of a pharyngoesophageal passage comprises inserting said first probe such that said first sensor arrangement is positioned proximate a lower esophageal sphincter of an individual.
66. A method of pharyngoesophageal monitoring as described in claim 65 wherein said step of inserting said first probe such that said first sensor arrangement is positioned proximate a lower esophageal sphincter of an individual comprises positioning said first sensor arrangement about 5 centimeters above the lower esophageal sphincter.
67. A method of pharyngoesophageal monitoring as described in claim 64 wherein said first portion corresponds to a pharyngoesophageal portion proximate a lower esophageal sphincter of an individual.
68. A method of pharyngoesophageal monitoring as described in claim 42 further comprising the step of stabilizing at least one probe within a pharyngoesophageal passage.
69. A method of pharyngoesophageal monitoring as described in claim 68 wherein said step of stabilizing is provided at a distal end of said at least one probe.
70. A method of pharyngoesophageal monitoring as described in claims 42 or 44 further comprising the step of adjustably configuring at least one probe corresponding to a upper esophageal sphincter of an individual.

71. A method of pharyngoesophageal monitoring as described in claim 42 or 44 further comprising the step of adjustably configuring at least one probe corresponding to a lower esophageal sphincter of an individual.
72. A method of pharyngoesophageal monitoring as described in claim 71 wherein said step of adjustably configuring comprises taking up slack of at least a portion of at least one probe.
73. A method of pharyngoesophageal monitoring as described in claim 70 wherein said step of adjustably configuring comprises taking up slack of at least a portion of at least one probe.
74. A method of monitoring acid reflux, comprising the steps of:
- a. sensing at least one characteristic of a first pharyngoesophageal portion;
  - b. generating at least one signal representative of said at least one characteristic of said first portion;
  - c. sensing at least one characteristic of a second pharyngoesophageal portion;
  - d. generating at least one signal representative of said at least one characteristic of said second portion;
  - e. integratively receiving said signals representative of said characteristics of said first and second portions;
  - f. correlating said received signals; and
  - g. monitoring acid reflux.